

MERCURY HAZARDS IN DENTAL SURGERIES - G. S. Nixon and H. Smith,
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The presence of mercury is an occupational hazard in dental surgery. While methods of preparation of silver amalgam have minimized this danger, it is still present during the preparation of copper amalgam. Metallic mercury evaporates at ordinary room temperature. Theoretically, 1 cubic mm. of air at 200 C. can hold 13 mg. mercury.

One great factor which contributes to increased concentrations of mercury vapour in the air is evaporation from mercury split during amalgam preparation. Mercury values of air in some surgeries have been given from 0.26 mg. Hg/m³ (VESTERBERG, R., Svensk.Tandlak. T.38:471-79, 1946) to 0.01 mg. Hg/m³ (FRYKHOLM, K. O., Acta odont. scand., 15, Supplement 22:73-78, 1957).

In the preliminary investigation, samples of fingernails, toenails, head hair, and axillary hair were obtained from twenty dental surgery assistants who had been actively engaged in surgery work for a period of at least 2 years. As a control, similar samples were taken from twenty subjects not exposed to mercury. The samples were irradiated in a reactor at a thermal neutron flux of 10¹² neutrons/cm²/sec for 1 week and the mercury content estimated by a method of neutron activation analysis. This method has a sensitivity of 10⁻¹⁰ gm.

In the control group, values of 2.28-24.4 ppm were obtained for hair samples and 0.8 to 15.8 ppm mercury for nails. No differences were found in the controls between head and axillary hair and between finger- and toenails. In the surgery assistants, both axillary hair and toenails were within the range of the control group, but the mercury content of head hair ranged from 1.90 ppm to 195.5 ppm and the fingernails from 2.78 ppm to 558.0 ppm. As the surgery assistants showed a much higher mercury level than the controls, further investigations are proceeding into the methods of amalgam preparation and surgery conditions."